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ORDNANCE DIVISION CHAMBERLAIN CORPORATION WATERLOO, IOWA

SIXTH
MONTHLY LETTER REPORT
DECEMBER 1965

PRODUCTION ENGINEERING OF PROJECTILE, HE, 107-MM, XM502

CONTRACT DA-28-017-AMC-2308(A) AMCMS CODE NO. 4230.1.69880.1

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19 JANUARY 1966

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P.O. BOX 2335 TELETYPE 910-525-1276 TELEPHONE 319-232-6541

WATERLOO, IOWA 50705

19 January 1966 Approved 16 May 1966

Commanding Officer
Picatinny Arsenal
Dover, New Jersey 07801

Attention: Procurement and Production Directorate, SMUPA-PBI

Subject:

Sixth Monthly Letter Report - December 1965

Contract DA-28-017-AMC-2308(A) AMCMS Code No. 4230.1.69880.1

Dear Sir:

The contents of this report are as follows:

- 1. GENERAL
- 2. SELECTION OF MATERIALS
- 3. TEST CYLINDERS
- 4. PROJECTILES
- 5. HOURS
- 6. PLANNING

APPENDIX I - ILLUSTRATIONS

APPENDIX II - FRAGMENTATION DATA APPENDIX III - DISTRIBUTION LIST

- I. GENERAL
- I.I Contractuai
- On 6 December 1965 the Corporation submitted a quotation to Picatinny Arsenal detailing the costs involved in redirecting efforts to production engineer the XM570 rather than the XM502 Projectile. Details of the changes to the scope of work were outlined in the November 1965 report. The quotation was being reviewed by the Arsenal at the time this report was written.

- 1.1.2 On 8 December 1965 the Company received Modification 2, dated 3 December 1965, to the subject contract. This change designates the offices and individuals responsible for administration of the contract and also specifies the addresses for administrative contractual correspondence.
- 1.2 Reference Material
- On 24 November 1965 the Company had written to Aberdeen Proving Ground (APG), Maryland, requesting a copy of Development and Proof Services Report DPS-TW-IIO-6. The scope of the contract states that end item effectiveness of the XM502 (or XM570) must be equivalent or superior to that cited in the report. Chamberlain Corporation previously had contacted Defense Documentation Center (DDC) and requested a copy, but DDC advised it was not available from that facility and recommended that it be requested from APG. In reply to the November letter of Chamberlain Corporation, APG stated that the report, AD 225 772, was available from DDC. The Company again will contact DDC for the document.
- 2. SELECTION OF MATERIALS
- 2.1 Certification was received from the supplier for the 1.1-1.2% carbon WI tool steel received during November 1965. The data from the check analysis performed by the mill are tabulated below.

ELEMENT	С	Mn	Р	S	Si
PERCENT	1.27	.30	.007	.006	.25

- 2.1.1 It should be noted that the 1.27% carbon content is above the range of 1.1 to 1.2% carbon specified on the purchase order. This deviation was relayed to the Technical Supervisor in a telephone conversation of 14 December 1965, and permission was given to use the 1.27% carbon steel.
- The steel mill manufacturing the high carbon, high phosphorus steel notified Chamberlain Corporation that ultrasonic inspection of the bar had revealed an "indication," or evidence of possible flaw in the center of the bar. The mill advised that approximately 10 feet

Sixth Monthly Letter Raport - December 1965 Contract DA-28-017-AMC-2308(A)

of 4.0 inches diameter bar would be shipped to the Company for testing to determine if it can be used. If metallurgical tests showed the bar to be sound, the mill would ship the remaining 30 feet. The information given by the mill was relayed to the Technical Supervisor in a telephone conversation on 14 December 1965.

- 2.2.1 On 20 December 1965 Chamberlain Corporation received approximately 10 feet of 4.0 inches diameter high carbon, high phosphorus steel bar per the arrangement discussed in 2.2, preceding. Samples were taken from the center and both ends of the bar for microetching and study. Photomicrographs of a sample taken from the center of the bar are shown on Photo No. 7284, Appendix 1.1 The results are representative of all samples studied. The structure of the bar appears to be spheroidized; however, other observations from study of the specimens were indicative of an unsound condition in the center of the bar for the entire length. Referencing the photograph, the black spots, some of which are connected or partially connected by black lines, appear to be evidence of a breakdown of the grain boundaries. The light area on the etch appears to be phosphorus segregation. Both of these conditions may have been caused during rolling of the bar from the billet (i.e., overworking). It was decided to process the bar into test cylinders and conduct similar laboratory tests on extruded pieces to determine if the unsound condition of the bar adversely affected grain flow. These tests, which will be conducted during January, will be the basis for a decision on ordering the remaining 30 feet of the heat.
- Also during December 1965 a steel company offered Chamberlain Corporation, free of charge, approximately 40 feet of 4.0 inches diameter AISI 06 steel bar. This steel is from four experimental heats, each with varying carbon content. There is approximately 10 feet of each heat. Chamberlain Corporation accepted the material as being of possible interest to the program, and will fabricate test cylinders from it for fragmentation study. Results of mill check analyses of chemical composition of the steels are shown on Table 1. Transverse hardness readings of the steels are shown on Table 2.

All illustrations cited in this report are included in Appendix i in order of reference unless otherwise specified.

CHEMICAL COMPOSITIONS OF FOUR EXPERIMENTAL STEELS (Check Analyses)

STEEL HEAT NO.	С	Mn	Р	S	Si	Cr	Мо	* AI	N
V8232-1	1.49	0.41	0.022	0.029	1.00	0.03	ù.26	0.007	0.008
V8233-1	1.45	0.99	0.022	0.026	1.11	0.03	0.30	0.013	0.007
V8234-1	1.47	1.46	0.026	0.026	0.96	0.03	<0.01	0.009	0.010
V8235-1	1.25	0.38	0.022	0.025	1.07	0.03	0.25	0.010	0.008
* Total									

TABLE 2

TRANSVERSE HARDNESS OF SLOW-COOLED BARS
OF FOUR EXPERIMENTAL STEELS

STEEL	RO	CKWELL "C" HARDNESS	
HEAT NO.	NEAR SURFACE	MIDRADIUS	CENTER
V8232-1	26.0	20.5	5.0
V8233-I	30.0	22.0	18.0
V8234-I	27.0	20.0	14.0
V8235-1	25.0	10.0	10.0

- TEST CYLINDERS
- 3.1 Fabrication
- Manufacture of cylinders from all steels except WI and the high carbon, high phosphorus steels has been completed. In addition, 50 slugs have been sawed from the WI steel and 30 slugs have been sawed from the high carbon, high phosphorus steel. The former will be fabricated into cylinders during January. Processing of the latter will be done at the same time the WI is processed. Metallurgical samples will be taken for macro, micro and hardness tests to determine the effect of the bar condition on grain flow and structure (Reference 2.2.1, preceding).
- In addition to the six materials above, nine cylinders have been made from the 1.12% carbon, 25% molybdenum steel furnished free of charge to the Company (See 3.1.3 of the November 1965 Letter Report). Ten (10) each slugs also have been sawed from the experimental heat bars of AISI 06 steel discussed in 2.3, preceding. These materials are for study only, and are not included in the steels already specified for this facet of the program.
- 3.2 Heat Treatment and Metallurgy
- 3.2.1 All heat treatment has been accomplished on three cylinders each from E52100, 06, 1095 and 9261 steels (Reference the chart in Appendix I of the November Letter Report). Three cylinders each from WI steel and high carbon, high phosphorus steel will be subjected to each of the applicable heat treatments shown in Columns 5 and 6 of the chart. Heat treatment of the latter is dependent upon the results of Chamberlain Corporation's metaliurgical studies. This will complete the heat treatments previously agreed upon. Remaining cylinders from all materials are being held pending selection of additional heat treatments by the Technical Supervisor.
- 3.2.2 Of the cylinders already heat treated, two from each heat treatment were used for fragmentation testing and the third is to be used for metallurgical studies. This procedure was discussed in detail in the November report. The third cylinder is cut to yield three each of the following rough specimens: tensile, Charpy, micro, bend and hardness. During the report period efforts centered on cutting the specimen blanks from the cylinders and machining the bianks into finished specimens. This work was in progress at the ciose of the report period.

Sixth Monthly Letter Report - December 1965 Contract DA-28-017-AMC-2308(A)

3.2.2.i With the exception of Charpy specimens, Chamberlain Corporation is preparing and testing specimens for other metallurgical studies. This facility does not have a Charpy test machine which is certified for the full range of Charpy values, so machining of specimens per Drawing No. J7886-IF and testing were subcontracted. Chamberlain Corporation is machining tensile test bars to the dimensions shown on Drawing No. J7886-3F; and is grinding bend and hardness specimens, the former per Drawing No. J7886-2F. Work was begun on cutting and polishing micro specimens. By the end of the report period the specimens shown on Table 3 had been completed and were ready for testing.

TABLE 3

METALLURGICAL SPECIMENS COMPLETED AS OF 31 DECEMBER 1965

CODE		SPEC	IMENS READY FO	R TEST	
NO.	TENSILE	BEND	CHARPY	HARDNESS	MICRO
A08	3	3	3	3	. 3
AA6	3	3	3	3	3
ACIO	3	3	3	3	3
BA6	3	3	_1	-	3
BA8	3	3	3	3	_
CC8	3	· 3	3	3	3
CS6	2	3	-	-	-
CCS8	3	-	_	_	_
DA6	3	3	-	3	_
DA8	1	3	3	-	_
J08	3	3	3	3	-
JC8	3	3	3	_	_
JTII	2	3	3	_	3

NOTES:

¹ Blanks Indicate specimen not finished.

- 3.2.2.2 The subcontractor performing the machining and testing of Charpy specimens was advised that a copy of the certification on his Charpy tester would be required. The certification had not been received at the time this report was written.
- 3.3 Fragmentation Testing
- Fragmentation testing was completed on two cylinders from each heat treatment of E52100, 06, 1095 and 9261 steels. The fragments have been weighed and counted, and the data are presented in Appendix II for review and information. No conclusions or recommendations are offered pending test firings of the other two steels in the program and consultations with the Technical Supervisor on desired objectives.
- 3.3.1.1 A note is considered necessary with regard to the two cylinders grouped under Code AO6R on the sheets in Appendix II. This was a repeat heat treatment and test of Code AO6. The hardness of the AO6 cylinders (Rockwell "C" 53 average) was regarded as low, and when these were fired the number of fragments recovered appeared to be low in comparison to other shots. Consequently, it was decided to re-shoot the test, using two cylinders heat treated the same as the original AO6. The second set of cylinders was Rockwell "C" 57, slightly higher than that for AO6. Fragmentation data were approximately similar (Reference Appendix II).
- 3.3.2 When heat treated cylinders are available from the Wi and high carbon, high phosphorus steels, testing will commence on these items.
- 3.4 Machining Studies
- 3.4.i No work was performed on this part of the program during the report month.
- 4. PROJECTILES
- 4.1 Specifications and Inspection Equipment
- 4.1.1 On 15 December 1965 a draft copy of a Purchase Description for the XM570 was given to a representative of Picatinny Arsenal for hand-carrying to the Technical Supervisor for his review and information.

- 4.1.2 The gage designs completed during the report period are listed in Appendix i. Copies of the drawings are not included in this report. These drawings, which are for the XM502, were finished near the end of November 1965; however, review and approval by the Quality Control Department was completed during December.
- 4.2 Process Development
- 4.2.1 No activity was expended on process development. Tool design and fabrication for hot press work has progressed to the point where further effort depends on a firm decision on projectile design.
- 4.3 Banding Studies
- 4.3.i A quotation was received from the other quoting company on broach tooling for cutting the teeth on the XM570 rotating band. As with other quotations, delivery was projected at 14 to 18 weeks after receipt of an order.
- 5. HOURS
- 5.1 The following tabulation shows the hours expended during the report period and also the cumulative hours to 31 December 1965.

	December 1965	Cumulative
Engineering	189.1	1,980.1
Drafting	91.4	459.0
Laboratory Testing	9.0	58.2
Shop (Prod. & Proc.)	183.3	779.1
Shop (Tooling)	128.1	406.5
inspection (Tooling & Prod.) 13.5	37.2
Performance Testing	208.7	268.2
Reports	58.5	233.5
Gage Engineering	131.9	321.2

TOTALS	1.013.5	4.543.0

Sixth Monthly Letter Report - December 1965 Contract DA-28-017-AMC-2308(A)

6.	PLANNING
6.1	January 1966
6.1.1	Heat treatment and testing of cylinders will continue, based on conclusions from review of data from initial tests and on decisions pertaining to heat treatment selection. Metallurgical tests of samples from cylinders of high carbon, high phosphorus steel will determine if the material being held at the mill will be ordered.
6.1.2	Process development will begin for either the XM502 or the XM570 provided that selection of design and material is made.
6.1.3	Machinability tests will proceed using the method outlined in the November 1965 progress report.
6.2	February 1966
6.2.1	Heat treatment and testing of cylinders will continue with variations selected by the Technical Supervisor.
6.2.2	Shell process development will continue.
6.2.3	Machinability tests will be continued during February for any additional heat treatments selected.
	Very truly yours,

Irving Herman Vice President

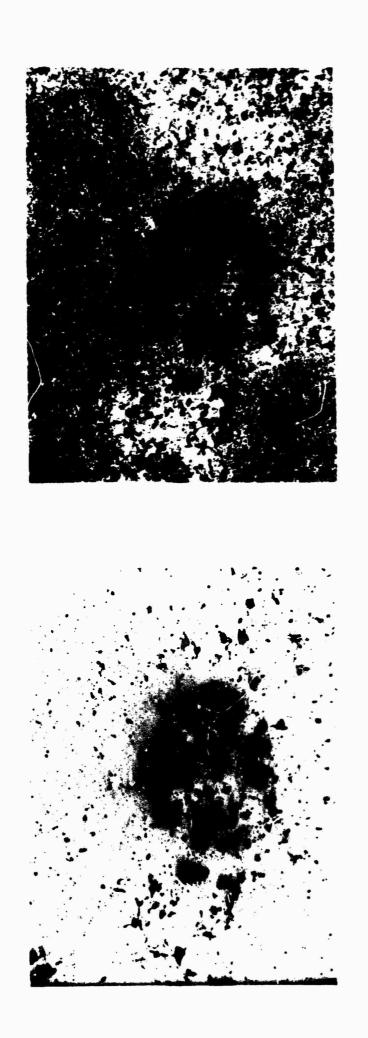
Ordnance Division

CHAMBERLAIN CORPORATION

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APPENDIX I

ILLUSTRATIONS



PHOTOMICROGRAPHS OF SAMPLE FROM CENTER OF 4.0 INCHES DIAMETER BAR OF HIGH CARBON, HIGH PHOSPHORUS STEEL. PHOTO NO. 7284

3% NITAL ETCH

100X

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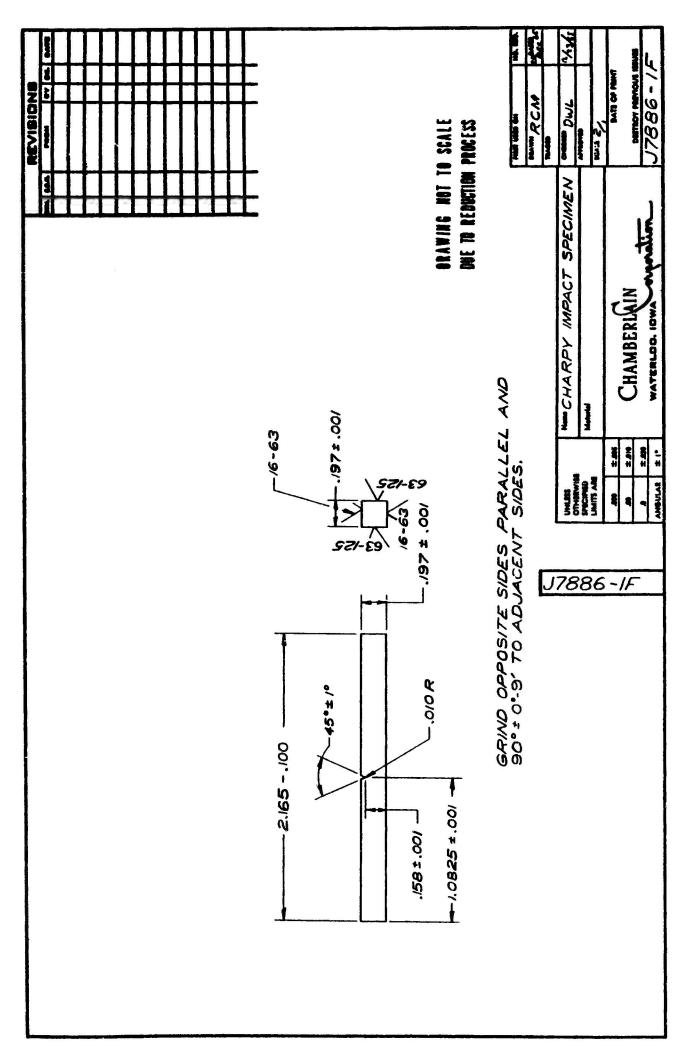
100X

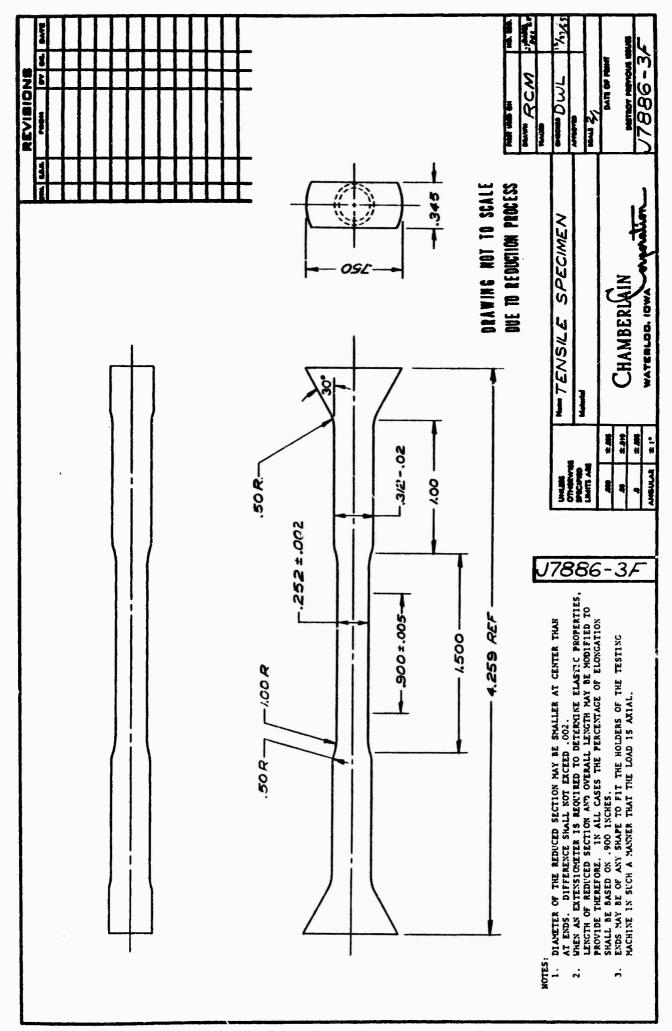
Lines, Appear To Be Breakdown Of The Grain Boundaries. The Light Area In The Etch Photo Ap Be Phosphorus Segregation. These Conditions Noted Throughout The 10 Feet Length Of The Bar. CHAMBERLAIN CORPORATION

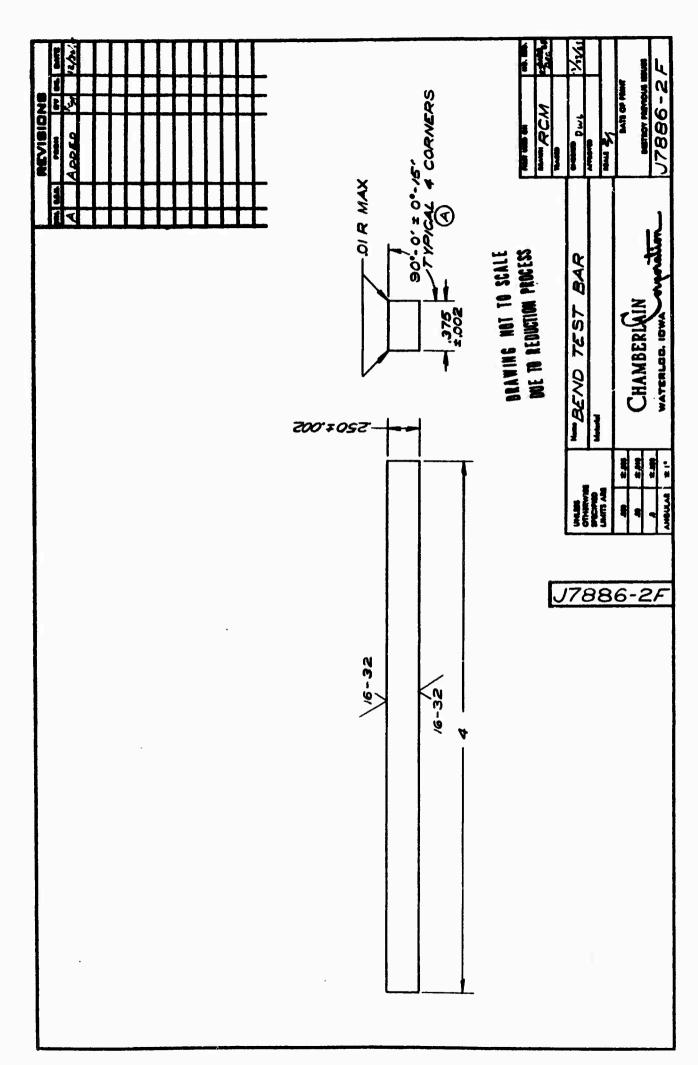
Structure Is Spheroidized, But Shows Evidence Of Breakdown.

The Black Spots, Some Connected By Black

In The Etch Photo Appears To







CONTRACT DA-28-017-AMC-2308(A)

LIST OF GAGE DRAWINGS COMPLETED DURING DECEMBER 1965

DRAWING	
NUMBER	DESCRIPTION
J7886-18D	Pitch diameter of base thread, minimum
J7886-20D	Pitch diameter of base thread, maximum and minimum length of thread
J7886-38D	Set plug for J7886-20D
J7886-39D	Set piug for J7886-18D
J7886-40D	Major diameter of base thread, minimum
J7886-42D	Width of band seat
J7886-53D	Width of band groove
J7886-70D	Concentricity of major diameter of rotating band with bourrelet diameter at front and rear of band (straight spline)
J7886-71D	Concentricity of major diameter of rotating band with bourrelet diameter at front and rear of band (helix spline)
J7886-71D-S	Acceptance check for J7886-71D

APPENDIX II

FRAGMENT DATA

AISI E52100 STEEL

FRAGMENTATION TEST DATA	TEST	N/A RECOVERY: Approximately 60° in	HARDNESS (R	AO6	BY WEIGHT AVERAGE DATA	#2 AVERAGE 50	5.9 6.9 22.4 24.1 5.0 6.3 6.3 9.5 7.0 8.4 10	FRAGS (ar.)	7 3.12 0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 >150	
	2308(A)	Applicable):	F52100 Steel		FRAGMENTS BY	SHOT #2	4.0.5.22 6.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	WEIGHT ALL F	3.67	
		(If Appli		TREATMENT OR	% OF FR	SHOT #1	28.4.4 2.4.4.4.0.0.7.	MEAN WE	2.56	
	CONTRACT:	TEST NO.	MATERIAL:	HEAT TREA	WEIGHT	GROUPS (Grains)	2-5 2-5 5-10 10-20 20-25 25-50 50-75 75-150			

					FRAGME	ENT AT 1 ON	I TEST DATA					
CONTRACT:	2308(A)	(A)					TEST ITEM:	 Z	5.0" L x	3.45" ID × 4.15" OD	Cyl Inder	٦
TEST NO.	(If Applic	Applicable):	N/A				RECOVERY:		Approximately 60°	tely 60° in Water		
MATERIAL:	E52100	Stee!					HARDNESS	<u>я</u>	"C"): 57 (A	57 (Average of 2 Cylinders)	(۶	
HEAT TREA	TREATMENT OR (COLE: A	A06R									
WE I GHT	% OF FRAC	FRAGMENTS BY	WEIGHT				A	AVERAGE	DATA			
Groups (Grains)	SHOT #	SHOT #2	AVERAGE				-	-	-	-	- T	50
Ŷ	5.1	5.0	5.1									
2 <u>-</u> 2	5.3 8 42	6.6 2.2	0.6									
5-10	26.4	26.8	26.6									
10-20	26.3	30.7	28.5								Ť	40
20-25	4.7	ۍ ه ه	٠. د. د									
50-75	†	3.0	1.5									
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				1				<u>.</u>			- 1	20
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	MEAN WEIGHT	ALL	I FRAGS (gr)							Γ		
	7 17	۲۵ ۲	<i>CC</i> 2								•	
	7	7.57	77.6	1-0	1-2	2-5	2-10 10	10-20	20-25 25-50	50-75 75-150	>150	·
MEAN WEIGHT	T FRAGMENTS	TS > 1 Gr	5.41				WEIGHT	GROUPS				
									Ž			

Mo. (if Applicable): N/A RECOVERY: Approximately 60° Mo. (if Applicable): N/A RECOVERY: Approximately 60° Make
A08 S BY WEIGHT # 2 AVERAGE 1 10.4 1 17.0 1 28.4 1 9.5 1 9.5
S BY WEIGHT 6 2.7 2 3.1 1 10.4 1 17.0 1 28.4 2 9.6 1 19.4 4 9.5
BY WEIGHT AVERAGE 2.7 2.7 3.1 10.4 17.0 28.4 9.6 19.4 1 9.5
2.6 2.7 3.1 10.4 19.1 19.4 10.4 9.5
2.6 10.1 13.2 13.3 14.1
2.2 10.1 27.1 13.3 14.1 19
27 28 13.3 - 28 14 19
1-4
t
WEIGHT ALL FRAGS (gr.)
F 77 F 72
2.74
FRAGMENTS > 1 Gr 9.15 WEIGHT GROUPS (grains)

				FRAGMENTATION TEST DATA	
CONTRACT:	2308(A)			TEST ITEM: 5.0" L x 3.45" ID	x 4.15" OD Cylinder
TEST NO.	(If Applic	Applicable):	N/A	RECOVERY: Approximately 60° in water	
MATERIAL:	E52100	00 Steel		HARDNESS (R "C"); 38 (Average	of 2 Cylinders)
HEAT TREA	TREATMENT OR (AA6		
WEIGHT	% OF FRACE	FRAGMENTS BY	/ WEIGHT	AVERAGE DATA	
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE		1 50
9	1.7	7.	1.2		
7-2		φ.	•		
5-10	0.0	7.1			
10-20	21.9	•	•		40
20-25	14.0	•	7.01		
50-75	ر م م	2.0	•		
75-150	3.6	• •	• •		•
					30 87
					-20
					0
	MEAN WEIGHT	ALL	FRAGS (ar)		
	7,74	12.41	10,08		
				0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75	5 75-150 3000
MEAN WEIGHT	H FRAGMENTS	TS > 1 Gr	15.54	WEIGHT GROUPS (grains)	
	Ł				

			·	FRAGMENTATION TEST DATA
CONTRACT:	2308(A)	(A)		TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
TEST NO. ((1f Applic	Applicable):	N/A	2
MATERIAL:	E52100 Steel	Steel		HARDNESS (R "C"): 38 (Average of 2 Cylinders)
HEAT TREATMENT	MENT OR (CODE: AA8	8	
	% OF FRAC	FRAGMENTS BY	WEIGHT	AVERAGE DATA
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE	05-
- - 0	7.	9.	۲.	
2 - 2	- <i>z</i>	- r	− ×	
5-10	6.4	ຸ່ວ	7.5	
10-20	19.5	13.9	16.7	4.0
20-25	47.8		6.3 - ×5	
50-75	21.6	21.0	21.3	
75-150	9		9.2	× 0%
				C
<u>1</u>	MEAN WEIGHT	ALL	FRAGS (ar)	
	2.5	13.83	12.44	
	- 1			1001-01 01-00 00
MEAN WEIGHT	FRAGMENTS	TS > 1 Gr	17.02	WEIGHT GROUPS (grains)

					FRAGMEN	ENTATION	TEST DA	DATA						
CONTRACT:		2308(A)						1	5.0" L × 3.4	3.45" 10 ×		4.15" OD CVI inder	nder	
TEST NO.	(If Appli	Applicable):	N/A				RECOVERY:		Approximately 60°		in Water			
MATERIAL:	E52100	0 Steel					HARDNESS	R)	"C"); 48	(Average	of 2	Cylinders)	5)	
HEAT TREA	TREATMENT OR	CODE: AC	ACB											
WE I GHT	\$ OF FRA	FRAGMENTS BY	WEIGHT					AVERAGE	DATA					
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE		-					-	•	-	- 1	50
<u>-</u>	9.0	7.2	8.1											
2-2	7.6	7.6	8.7											
5-10	26.3	28.5	27.8											-
10-20	24.0	25.3	24.7										Ť	6
20-25	0, v	4 r	3.6											·-
50-75)	2.6	. – . –											•
				1										30 BY
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	MEAN WEIGHT	ALL	FRAGS (ar)											
	0	, ,		السيد حييد						L	Γ	•		
	7.47	2.64	2.53	0-1	1-2	2-5	5-10	10-20	20-25 25-50		50-75 75	75-150 >1	>150	
MEAN WEIGHT	HT FRAGMENTS	TS > 1 Gr	5.74				WE I GH	T GROUP	_					

CONTRACT: 2506(A) TEST ITEM: 5.0" L X 3.49" ID X 4.15" OD CALIDIGER		ı				FRAGM	FRAGMENTATION	N TEST DATA	ATA		١				i I
NO. (14 Applicable): N/A RECOVERY: Approximately 60° In Wester PIAL: E52100_Steal HARDNESS (R "C"); 42 (Average of 2 CylInders) TREATMENT OR CODE: ACIO HARDNESS (R "C"); 42 (Average of 2 CylInders) Average of 2 CylInders Average o	CONTRACT:		A)					TEST	TEM:	5.0" L	× 3.45	ID × 4	15" 00	Cylind	P.
THEATHENT OR CODE: ACIO TREATMENT OR CODE: ACIO THEATHENT OR CODE: ACIO THEATHENT OR CODE: ACIO THEATHENT OR CODE: ACIO THEATHENT OR CODE: ACIO AVERAGE DATA AVERAG	ON		cable):	N/A				RECOVE	RY:	Approxi	mately	60° In	Mater		
TREATMENT OR CODE: ACIO THE ATMENT OR CODE: ACIO THE ATMENT OR CODE: ACIO THE ATMENT OF FRACINENTS BY WEIGHT THE ATMENT OF FRACINENTS BY WEIGHT AVERAGE DATA AVERAGE	MATERIAL:							HARONE			42 (Ave	rege of	2 CVIIn	ders)	
S OF FRAGMENTS BY WEIGHT SHOT #2 AVERAGE DATA SHOT #2 AVERAGE SHOT #1 SHOT #2 AVERAGE SHOT #1 SHOT #2 AVERAGE Shot #4.0 Shot		A R		013	ē										
CHT															
SHOT #1 SHOT #2 AVERAGE SHOT #2 AVERAGE SHOT #1 SHOT #2 AVERAGE Shot #1 SHOT #2 AVERAGE Shot #2 Shot #3 Shot #2 Shot #3 Shot #	WEIGHT	OF.		WEIGHT					AVERAC						
1 3.1 4.8 4.0 4.4 4.0 4.4 4.0 4.4 4.0 4.4 4.0 4.4 4.0 4.0	GRODPS (Grains)			AVERAGE	-					-		-	-	•	20
5 8.4 15.8 12.1 10.1 28.5 12.1 10.1 10.1 10.1 10.1 10.1 10.1 10.1	9-	3.1	4.8	4.0											
10. 17.5 18.7 18.1 18.1 18.1 18.1 18.1 18.1 18.1	2-5	101	. w .	1.5											
25 13.0 7.1 10.1 16.0 17.8 14.1 16.0 16.0 17.8 14.1 16.0 16.0 17.8 14.1 16.0	수 6 5 8	7.5 26.8	30.1	18.1 28.5	ı										40
150 3.8 3.3 3.6 -30 -30 -30 -30 -30 -30 -30 -30 -30 -30	20-25	W.	7.1	•											,
50 3.8 3.3 3.6	50-75	6.7	<u>:</u> !	3.4											
MEAN WEIGHT ALL FRAGS (Gr.) 4.93 3.47 4.93 3.47 4.06 C-1 1-2 25 5-10 10-20 20-25 25-50 50-75 75-150 5150 WEIGHT FRAGNENTS > 1 Gr. WEIGHT GROUPS (grains)	75-150	ю. Ф.	۳. ۳.	3.6											7 6
MEAN WEIGHT ALL FRAGS (Gr.) 4.93 3.47 4.20 C-1 1-2 25 5-10 10-20 20-25 25-50 50-75 75-150 >150 WEIGHT FRAGMENTS > 1 Cr. 8.08 WEIGHT FRAGMENTS > 1 Cr. 8.08					ì.) *
MEAN WEIGHT ALL FRAGS (Qr.) 4.93 3.47 4.20															
MEAN WEIGHT ALL FRAGS (gr.) 4.93 3.47 4.20					4									·	50
MEAN WEIGHT ALL FRAGS (gr.) 4.93 3.47 4.20															
MEAN WEIGHT ALL FRAGS (gr.) 4.93 3.47 4.20							Ī								
MEAN WEIGHT ALL FRAGS (Gr.) 4.93 3.47 4.93 3.47 4.20 C-1 1-2 25 5-10 10-20 10-25 25-50 50-75 75-150 WEIGHT FRAGMENTS > 1 Gr. WEIGH					ı									·	<u> </u>
MEIGHT FRAGMENTS > 1 Gr 8.08 1							***								
4.93 3.47 4.20 1-2 25 5-10 10-20 20-25 25-50 50-75 75-150 WEIGHT FRAGMENTS > 1 G. 8.08 WEIGHT GROUPS (grains)		MEAN WE !	ALL												
WEIGHT FRAGMENTS > 1 Gr 8.08 C-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 WEIGHT GROUPS (grains)		4.93	3.47	4.20											
WEIGHT FRAGMENTS > 1 Gr 8.08					-5		25	5-10	10-20		25-50	50-75	75-150	>150	===
	MEAN WEIGH		^	8.08				WEIGH	T GROU	S (grain	ns)				

MEAN WEIGHT FRAGMENTS > 1 GF 9.01 0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 > 150	IGHT ALL FRAGS (ar.)
FRAGMENTS > 1 GF 9.01	2.50
10.8 (F) V	EDAGMENTS
	FRAGMENTS > 1 CT
	יייייייייייייייייייייייייייייייייייייי

5-10 10-20 30.7 20-25 20-25 8.7 11.6 50-75 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3	4 W W	N/A RECOVERY: Approximately out in water HARDNESS (R "C"); 51 (Average of 2 Cylinders) SSB AVERAGE 2.4 3.3 11.2 26.1 10.2 21.4 7.3	Water 1
MEAN WEIGHT AL	ALL FRAGS ((ac.)	
5.97 5.	5.60 5.79	35 05 05 05 05 0 35 05 0 35 05 05 05 05 05 05 05 05 05 05 05 05 05	9
~		0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150	>150

AISI 06

STEEL

FRAGMENTATION TEST DATA	TEST ITEM: 5.0" 1 x 3.45" ID x 4.15" OD Cvlinder	ERY: Approximately 60° in	HARDNESS (R "C"); 61 (Average of 2 Cylinders)			AVERAGE DATA	05			40		130 EY			0			0-1 1-2 2-5 2-10 10-20 20-25 20-75 72-12-1 120 1	יפויים ועו פרטטרט והובות
		N/A		B06		WEIGHT	AVERAGE	22.1	34.0	8.4 8.4	۲.					FRAGS (ar)	1.17		2.91
	Α)	Applicable):	el.	CODE: B(:	FRAGMENTS BY	SHOT #2	25.9	35.3	<u>3.0</u>						ALL	.93		15 > 1 Gr
	2308(A)	(If Applic	06 Steel	g		3 OF FRAC	SHOT #1	18.2	32.6	16.7	1.3					MEAN WEIGHT	1.40		FRAGMENIS
	CONTRACT:	TEST NO. (MATERIAL:	HEAT TREATMENT		WEIGHT	GROUPS (Grains)	9 -	2-5	5-10 10-20	20-25								MEAN WEIGH

FRAGMENTATION TEST DATA	TEST ITEM: 5.0" L \times 3.45" ID \times 4.15" OD Cylinder	RECOVERY: Approximately 60° in Water	HARDNESS (R "C"): 55 (Average of 2 Cylinders)		HT AVERAGE DATA	MGE 1 50		140	6	30 BY	- 50		(ar.)	70 0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 >150	WEIGHT GROUPS (grains)
		N/A		B08	WEIGHT	AVERAGE	12.4 13.8 32.9	27.0	7.6.			-	FRAGS (ar.)	1.70	3.61
	3(A)	Applicable):	el	CODE: E	FRAGMENTS BY	SHOT #2	9.3 11.6 31.0	30.0					 ALL	2.00	TS > 1 Gr
	2308(A)	(1f Applio	06 Steel	TREATMENT OR	\$ OF FRA	SHOT #1	15.4 15.9 34.7	23.9 8.9 -	-				MEAN WEIGHT	1.39	T FRAGMENTS
	CONTRACT:	TEST NO.	MATERIAL:	HEAT TREA	WE I GHT	Grains)	0-1 2-2 2-5	7-7- 0-20 2-20	25-50						MEAN WEIGHT

TEST NO. (1f Applicable): N/A RECONTRACT: 2308(A) RECONTRACT: 06 Steel HEAT TREATMENT OR CODE: BA6 HARDING GROUPS SHOT #1 SHOT #2 AVERAGE SHOT #1 AVERAGE AVERAGE	TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder RECOVERY: Approximately 60° in Water HARDNESS (R "C"); 45 (Average of 2 Cylinders) AVERAGE DATA AVERAGE DATA 40 10 11 12 130 BY 120
NO. (If Applicable): N/A RIAL: 06 Steel TREATMENT OR CODE: BA6 GHT % OF FRAGMENTS BY WEIGHT UPS SHOT #1 SHOT #2 AVERAGE 1	Approximately 60° in Water (R "C"): 45 (Average of 2 Cylinders) ERAGE DATA
HIAL: 06 Steel TREATMENT OR CODE: BA6 GHT % OF FRAGMENTS BY WEIGHT UPS SHOT #1 SHOT #2 AVERAGE 1	ERAGE DATA ERAGE DATA - 50 - 20
GHT % OF FRAGMENTS BY UPS SHOT #1 SHOT #2 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8	DATA 50 50 50 50 50 50 50 50 50 50 50 50 50
S SHOT #1 SHOT #2 S) SHOT #1 SHOT #2 8.5 8.5 29.1 25.7 25.7 22.5 22.5 24.2 4.2 4.4 3.7	DATA 50 50 50 50 50 50 50 50 50 50 50 50 50
S SHOT #1 SHOT #2 7.6 4.9 8.5 5.8 29.1 24.0 25.7 28.9 22.5 28.4 2.1 4.2 4.4 3.7	DATA 50 - 50 - 50 - 50 - 50 - 50 - 50 - 50
S. SHOT #1 SHOT #2 7.6 4.9 8.5 5.8 29.1 24.0 25.7 28.9 22.5 28.4 2.1 4.2 4.4 3.7	40 40 50 40 50 50 50 50 50 50 50 50 50 50 50 50 50
7.6 8.5 29.1 25.7 22.5 22.5 2.1 4.2 4.2	40 % % % % % % % % % % % % % % % % % % %
22.5 22.5 2.1 4.4 4.7 3.7	30 BY WT.
4.4	30 BY WT.
	30 BY WT.
	- 50
	0
MEAN WEIGHT ALL FRAGS (ar.)	
2.39 3.11 2.75 0-1 1-2 2-5 5-10	1-2
	WEIGHT GROUPS (grai

					FRAGM	ENTAT I ON	1 1	1 1						П
CONTRACT:		2308(A)					TEST ITEM:	ı	5.0" L x	3.45" ID	×	4.15" OD Cylinder	nder	
TEST NO.	(1f Appli	Applicable):	N/A				RECOVERY:		Approximately	ately 6	60° in Water	er		
MATERIAL:	90	Steel					HARDNESS (R		"C"):	47 (A	47 (Average of	2 Cylinders)	ers)	
HEAT TREA	TMENT	OR CODE:	BA8							ı				
WEIGHT	% OF FRA	FRAGMENTS BY	WEIGHT					AVERAGE	SE DATA					
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE		_	-	_			_	•	-	_ 1	50
9-1	2.9	2.1	2.5											· · · · · · · · · · · · · · · · · · ·
2-5	0.8	12.4	9.11	-										
	19.1	15.7	17.4											04
20-25	6.3	10.8	8.2	L									r	
25-50	22.3	19.4	20.9											
75-150	0.4 0.4	, w	4.2											×
							•						· ·	30 BY ⊾T
			47.2						السجيح				·	<u>.</u>
														•
														20
										المانورون والمانور				
			<u>.</u>										•	<u> </u>
and Palacet Annual Palacet							» - •-							, , , , , , , , , , , , , , , , , , ,
· · · · · · · · · · · · · · · · · · ·	MEAN WEIGHT	ALL	FRAGS (ar)							: -,				
	5.09	5.5	5,30										1	
				0-1	1-2	2-5	5-10	10-20	20-25	25-50	50-75	75-150 >	>150	
MEAN WEIGHT	IT FRAGMENTS	ITS > 1 Gr	9.07				WEIGHT	IT GROUPS	PS (grains)	ins)				
			Į											

TEST NO. (1f Applicable): N/A RECOVERY: Approxim MATERIAL: 0.6. Steal HEAT TREATMENT OR CODE: RS.6 SROWENS BY WEIGHT S.O. FRAGMENTS BY WEIGHT AVERAGE DATA GROUPS SHOT #1 SHOT #2 S.3	N/A RECOVERY: Approximately 60° In Water HARDNESS (R "C"): 49 (Average of 2 Cylinders) HARDNESS (R "C"): 49 (Average of 2 Cylinders) AVERAGE 4.3 5.3 17.1 26.7 5.5 11.6 3.7
SHAL: O6 Steal TREATMENT OR CODE: BS6 CHT	### ANERAGE DATA AVERAGE DATA 4.3 5.3 17.1 26.0 26.7 5.5 11.6 3.7
TREATMENT OR CODE: BS6 SHOT #1 SHOT #2 AVERAGE AVERAGE DATA SHOT #2 AVERAGE DATA Average Average	AVERAGE DATA AVERAGE 4.3 5.3 17.1 26.0 26.7 5.5 11.6 3.7
S SHOT #1 SHOT #2 AVERAGE S) 4.3 17.2 17.2 17.0 29.9 23.4 26.7 7.8 3.2 5.5 9.9 13.2 11.6 7.4 3.7	AVERAGE DATA AVERAGE 4.3 5.3 17.1 26.0 26.7 5.5 11.6 13.7
S SHOT #1 SHOT #2 AVERAGE S.7 4.9 4.3 6.0 4.5 5.3 17.2 17.0 17.1 25.5 26.4 26.7 7.8 3.2 11.6 9.9 13.2 11.6 7.4 3.7	AVERAGE DATA AVERAGE DATA 4.3 5.3 17.1 26.0 26.7 5.5 11.6 3.7 5.5 11.6 3.7
S SHOT #1 SHOT #2 3.7 4.9 6.0 4.5 17.2 17.0 25.5 26.4 29.9 23.4 7.8 3.2 9.9 13.2	AVERAGE 4.3 5.3 17.1 26.0 26.7 5.5 11.6 3.7
3.7 4.9 4.5 5.0 17.2 17.2 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.8 3.2 26.4 26.4 26.9 9.9 13.2 11.7 17.0 17.0 17.0 17.0 17.0 17.0 17.0	ŭŭ-ori∂r
17.2 25.5 29.9 23.4 26.4 26.4 26.4 26.4 26.4 26.4 26.4 26	- · · · · · · · · · · · · · · · · · · ·
29.9 23.4 26. 7.8 3.2 5. 9.9 13.2 11. 7.4 3.	20 20 20 20 20 20 20 20 20 20 20 20 20 2
7.8 9.9 13.2 11. 7.4 3.	30
2.4	
	30 BY
	0_
MEAN WEIGHT ALL FRAGS (ar)	
1 0-1 1-2 1 2-5 1 5-10 110-20 120-25 12	1 1-2 2-5 5-10 10-20
MEAN WEIGHT FRAGMENTS > 1 Gr 6.37 WEIGHT GROUPS (grain	6.37

C1095

STEEL

S(A) icable): 5 Steel CODE: CODE: CODE: 3.0 3.0 3.0 10.3 10.3 17.4 17.4 17.4 16HT ALL FRAC
No. (14 Appliage) No. (15 Appliage) No. (16 Appliage) No.
Page
Applicable 1
Applicable 1
1908 (A) 1
Short A State of the following state of t
RAGNENTATION TEST DATA RECOVERY: 3.45" D x 4.15" OD Cylinder NO. (14 Applicable): N/A RECOVERY: Approximately 60° in water
Short A State of the following state of t
Short A State of the following state of t
Applicable 1
RACT: 2308(A) TEST ITEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (14 Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: (1095 Steel Cook Cook Cook Cook Cook Cook Cook Coo
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No. (14 Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Approximately 60° In Water RELATION TEST TEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (14 Applicable): N/A RECOVERY: Approximately 60° In Water RELATION CODE: COC No. (14 Applicable): N/A RECOVERY: Approximately 60° In Water RELATION CODE: COC RELATION CODE: COC No. (14 Applicable): N/A RECOVERY: APPLICATION CODE: COC No. (14 Applicable): N/A RECOVERY: APPLICATION CODE: COC No. (15 Applicable): N/A
No. (14 Applicable): N/A RECOVERY: Approximately 60° In Water
No. (1f Applicable): N/A RECOVERY: Approximately 60° In Water
No. (14 App Cable
No. (14 Applicable): N/A TEST ITEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder
No. (14 App licable): N/A RECOVERY: S.O" L x 3.49" ID x 4.15" OD Cylinder
No. (14 App licable): N/A TEST ITEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (14 App licable): N/A RECOVERY: Approximately 60° in Water RIAI: Clo95 Steel
No. (If App licable): N/A TEST ITEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder
No. (If App licable): N/A TEST 1TEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder
No. (if Applicable): N/A TEST TIEN: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (if Applicable): N/A RECOVERY: Approximately 60" In Water No. (if Applicable): N/A RECOVERY: Approximately 60" In Water RTAL: Clo95 Steel
No. (if Applicable): N/A RECOVERY: 5.0" L x 3.49" ID x 4.15" OD Cylinder No. (if Applicable): N/A RECOVERY: 5.0" L x 3.49" ID x 4.15" OD Cylinder No. (if Applicable): N/A RECOVERY: Approximately 60° In Water RIAI.: Clo95 Steel Co6 Co/linders TREATMENT OR CODE: Co6 Co/linders TREATMENT OR COD
No. (14 App licable): N/A TEST ITEN: 5.0" L x 3.49" ID x 4.19" OD Cylinder No. (14 App licable): N/A RECOVERY: Approximately 60" In Water RIA1: Clo95 Sheel
FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD CYLINGER No. (If Applicable): N/A RECOVERY: Approximately 60° In Nater RTAL: CLO95 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders)
FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" 00 Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATHENT OR CODE: C06 FRAGMENTS BY WEIGHT GHT \$ OF FRAGMENTS BY WEIGHT LOSS SHOT #1 SHOT #2 AVERAGE 1.3 3.0 2.7 3.0 2.7 1.4 10.15 3.0 2.7 5.0 17.4 18.7 5.0 20.0 17.4 18.7 5.1 4.5 5.4 FRAGMENTS BY WEIGHT AVERAGE AVERAGE 1.3 10.8 1.4 10.15 10.9 1.5 10.9 1.5 10.9 1.6 10.7 1.7 10.9 1.8 10.7 1.9 10.8
PROCHES TO DATA PROCESS TO STATE TO STATE TO THE STATE TO STAT
PRACMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (if Applicable): N/A RECOVERY: Sproximately Go In Water RIAI; Clo95 Steel HARDNESS (R "C"); 5! (Average of 2 Cylinders)
PRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAI: CIO95 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders)
PRACMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
PRACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
No. (I 4 Applicable): N/A RECOVERY: 5.0" L x 3.45" ID x 4.15" OD Cylinder
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA No. (14 Applicable): N/A RECOVERY: 5.0" L x 3.45" ID x 4.15" OD Cylinder No. (14 Applicable): N/A RECOVERY: Approximately 60° In Water RIAI: Clo95 Steel
FRACMENTATION TEST DATA FRACMENTATION TEST DATA
FRACMENTATION TEST DATA TRACT: 2308(A) NO. (1f Applicable): N/A NO. (1f Applicable): N/A FROWERY: Approximately 60° In Water FRACMENT OR CODE: Co6 FRACMENT OR CODE: C6 FRACMENT OR CODE: C66 FRACMENT OR CODE: C66 FRACMENT OR CODE: C66 FRACMENT OR CODE: C66 FRACMENT OR CODE: C67 FRACMENT OR C
PAGENTATION TEST DATA FRAGMENTATION TEST DATA
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PAGGENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" Dx 4.15" DC Cylinder NO. (1f Applicable): N/A RECOVERY: ApproxImately 60° In Water NO. (1f Applicable): N/A RECOVERY: ApproxImately 60° In Water RIAL: C1095 Steel
PAGGINETATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water NIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) SHOT #1 SHOT #2 AVERAGE DATA AVERAGE DATA SHOT #1 SHOT #2 AVERAGE DATA SHOT #1 SHOT #2 1.3 18.8 SHOT #1 SHOT #2 1.3 18.8 SHOT #1 SHOT #2 1.3 18.8 SHOT #1 SHOT #2 2.3 3.0 2.7 Shot #1 Shot #2 2.3 3.0 2.7 Shot #3 2.3 3.0 2.2 Shot #3 2.3 3.0 2.2 Shot #3 2.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3
PRAGMENTATION TEST DATA PRAGMENTATION TEST DATA PRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
PRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: ClO95 Steel
PRAGMENTATION TEST DATA FRAGMENTATION TEST DATA
PRAGMENTATION TEST DATA PRAGMENTATION TEST DATA
PRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel
State Stat
RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" D x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60" in Water RIAL: C1095 Steel N/A RECOVERY: Approximately 60" in Water HARDNESS (R "C"): 51 (Average of 2 Cylinders) State
RACT:
RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" Dx 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A RECOVERY: Approximately 60" n Water NO. (1f Applicable): N/A N Water NO. (1f Applicable): N/
RACT:
PRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder TEAT ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder N/A RECOVERY: Approximately 60° In Water RAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 HARDNESS (R "C"); 51 (Average of 2 Cylinders) Substitution N/A
RACT:
RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RAL: ClO95 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: Co6 HARDNESS (R "C"): 51 (Average of 2 Cylinders) SHOT #1 SHOT #2 Average SHOT #2 Average of 2 Cylinders SHOT #1 SHOT #2 Average SHOT #2 Average 11.4
RACT: 2208(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (if Applicable): N/A RECOVERY: Approximately 60° in Water RAL: ClO95 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: CO6 HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: CO6 HARDNESS (R "C"): 51 (Average of 2 Cylinders) Average of 2 Cylinders Average of 3 Cylinders Average of 4 Cylinders Average of 4 Cylinders Average of 5 Cyli
RACT: 2208(A) FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water
RACT: 2308(A) FRAGMENTATION TEST DATA
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA NO. (If Applicable): N/A RECOVERY: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water RIAL: Cl095 Steel
RECOVERY: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders TEST ITEM: 5.0" L x 3.45" ID x 4.15"
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RAGCT: 2308(A) FRAGMENTATION TEST DATA NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water
RACT: 2308(A) FRAGMENTATION TEST DATA
RACT: 2308(A) FRAGMENTATION TEST DATA NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water RIAL: C1095 Steel RECOVERY: Approximately 60° in Water RIAL: C1095 Steel RECOVERY: Approximately 60° in Water TREATMENT OR CODE: C06 HARDNESS (R "C"); 51 (Average of 2 Cylinders) Soft Soft ShOT #2 AVERAGE
RACT: 2308(A) FRAGMENTATION TEST DATA NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° in Water NO. (1f Applicable): N/A RECOVERY: Approximately 60° NO. (1f Applicable): N/A RECOVER
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA
FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Approx
FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Approx
RACT: 2308(A) FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: Cl095 Steel
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder Log
FRAGWENTATION TEST DATA RACT: 2308(A) FRAGWENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) CHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA AVERAGE DATA CHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA AVERAGE DATA 10 S 3.3 3.9 3.6 3.6 11 A 10.3 10.9 3.6 3.6 10 16.2 21.3 18.8 3.6 20 20.0 17.4 18.7 9.1 20 20.0 17.4 18.7 3.5 20 20.0 17.4 18.7 3.5 20 20.0 17.4 18.7 3.5 20 20.0 17.4 18.7 3.5 20 20.0 17.4 18.7 3.5
FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA FRAGWENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD CYLINGER NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Approximately 60°
FRAGWENTATION TEST DATA FRAGWENTATION TEST DATA FRAGWENTATION TEST TEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Approximately 60° I
FRAGMENTATION TEST DATA RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: ApproxImately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 HARDNESS (R "C"); 51 (Average of 2 Cylinders) GHT % OF FRAGMENTS BY WEIGHT AVERAGE NOT # 1 UPS 3.0 2.7 AVERAGE 1 2.3 3.6 3.6 2 3.3 3.6 3.6 10 16.2 21.3 18.8 20 27.8 30.5 29.2 20 27.8 30.5 29.2 20 27.8 30.5 30.5 20 27.8 30.5 30.5 20 27.8 30.5 20 27.8 30.5 20 27.8 30.5 20 27.7 20 27.7 20
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST TIEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder State Sta
RACT:
RACT: 2308(A) FRAGMENTATION TEST DATA
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA
RACT: 2308(A) FRAGMENTATION TEST DATA NO. (1f Applicable): N/A TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders NO. (1f Applicable): N/A RECOVERY: Approximately 60° In water RIAL: C1095 Steel C06 HARDNESS (R "C"); 51 (Average of 2 CylInders) GHT % OF FRAGMENTS BY WEIGHT MAEANGE AVERAGE DATA AVERAGE DATA List 10.3 10.9 10.9 10.9 10.9 List 21.3 30.5 20.5 10.9 10.9 Los 27.8 30.5 20.5 20.5 20.5 20.5 Los 27.8 30.5 20.5 20.5 20.5 20.5 Los 27.8 30.5 30.5 30.5 30.5 30.5 30.5
RACT: 2308(A) FRAGMENTATION TEST DATA
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders FRAGMENTS BY WEIGHT FRAG
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA
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FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder SIAL SIAL SIAL SIAL SHOT #1 SHOT #2 AVERAGE DATA SHOT #3 SHOT #
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RECOVERY: Appr
RACT: 2308(A) FRAGWENTATION TEST DATA NO. (1f Applicable): N/A TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA GHT \$ OF FRAGMENTS BY WEIGHT AVERAGE OATA Inc. 2.3 3.0 2.7 2 3.3 3.6 3.6 3.3 3.9 3.6 5 11.4 10.3 10.9
RACT: 2308(A) FRAGWENTATION TEST DATA
FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder
FRAGMENTATION TEST DATA RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (1f Applicable): N/A RECOVERY: ApproxImately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA AVERAGE DATA GHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA 1
FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder SIAL: C1095 Steel N/A RECOVERY: Approximately 60° In Water RECO
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06 CHT
FRAGMENTATION TEST DATA RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (if Applicable): N/A RECOVERY: ApproxImately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA AVERAGE DATA GHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA Image: Company of the compa
FRAGMENTATION TEST DATA Solid (Average of 2 Cylinders) FRAGMENTS BY WEIGHT SHOT #1 SHOT #2 AVERAGE
RACT: 2308(A) TEST DATA NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 GHT % OF FRAGMENTS BY WEIGHT AVERAGE DATA UPS SHOT #1 SHOT #2 AVERAGE 1102) SHOT #1 SHOT #2 AVERAGE 1103 SHOT #1 SHOT #2 AVERAGE 1104 SHOT #1 SHOT #2 AVERAGE 1105 SHOT #1 SHOT #2 AVERAGE 1106 SHOT #1 SHOT #2 AVERAGE 1107 SHOT #1 SHOT #2 AVERAGE 1108 SHOT #1 SHOT #2 AVERAGE 1109 SHOT #1 SHOT #2 AVERAGE M2 SHOT #4 SHOT #
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06 CHT & OF FRAGMENTS BY WEIGHT UPS SHOT #1 SHOT #2 AVERAGE RACMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder RECOVERY: Approximately 60° In Water HARDNESS (R "C"): 51 (Average of 2 Cylinders) AVERAGE DATA AVERAGE DATA Inc. SHOT #1 SHOT #2 AVERAGE
RACT: 2308(A) FRAGMENTATION TEST DATA NO. (If Applicable): N/A TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"); 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA AVERAGE DATA CHT SHOT #1 SHOT #2 AVERAGE 10s3 SHOT #1 SHOT #2 AVERAGE
RACT: 2308(A) FRAGMENTATION TEST DATA NO. (If Applicable): N/A TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA GHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA UPS SHOT #1 SHOT #1
RACT: 2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel HARDNESS (R "C"): 51 (Average of 2 Cylinders) TREATMENT OR CODE: C06 AVERAGE DATA GHT \$ OF FRAGMENTS BY WEIGHT AVERAGE DATA NHOT #1 SHOT #1 SHOT #2
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT % OF FRAGMENTS BY WEIGHT SHOT #1 SHOT #2 AVERAGE SHOT #1 SHOT #2 AVERAGE TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinders) RECOVERY: Approximately 60° In Water HARDNESS (R "C"): 51 (Average of 2 Cylinders) AVERAGE DATA
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: ApproxImately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT % OF FRAGMENTS BY WEIGHT UPS CLOSS STEEL HARDNESS (R "C"): 51 (Average of 2 Cyllinders) AVERAGE DATA AVERAGE DATA I I I I I I I I I I I I I I I I I I I
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT & OF FRAGMENTS BY WEIGHT UPS
RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT % OF FRAGMENTS BY WEIGHT AVERAGE DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° in Water HARDNESS (R "C"): 51 (Average of 2 Cyll
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT % OF FRAGMENTS BY WEIGHT AVERAGE DATA ANERAGE DATA
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in water RIAL: C1095 Steel TREATMENT OR CODE: C06 GHT SOF FRAGMENTS BY WEIGHT AVERAGE DATA ANERGE DATA
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water TREATMENT OR CODE: CO6 GHT & OF FRAGMENTS BY WEIGHT RACH: 23.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water HARDNESS (R "C"): 51 (Average of 2 Cyll
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RIAL: CIO95 Steel TREATMENT OR CODE: CO6 CHT 4 OF EDACMENTS BY WFIGHT AVERAGE DATA
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TREATMENT OR CODE: C06
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° In Water RIAL: C1095 Steel TOTALE C1095 Steel
FRAGMENTATION TEST DATA RACT: 2308(A) NO. (If Applicable): N/A RECOVERY: Approximately 60° in Water RIAL: C1095 Steel HARDNESS (R "C"): 51 (Average of 2 Cyll
FRAGMENTATION TEST DATA 2308(A) (If Applicable): N/A C1095 Steel FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD HERDNESS (R "C"): 51 (Average of 2 Cyll
FRAGMENTATION TEST DATA 2308(A) (if Applicable): N/A Cl095 Steel FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water Cl095 Steel
FRAGMENTATION TEST DATA 2308(A) (if Applicable): N/A C1095 Steel FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water C1095 Steel
FRAGMENTATION TEST DATA 2308(A) (If Applicable): N/A CLOSE STORM RECOVERY: Approximately 60° in Water
FRAGMENTATION TEST DATA 2308(A) (If Applicable): N/A FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° in Water
FRAGMENTATION TEST DATA 2308(A) (If Applicable): N/A FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water
FRAGMENTATION TEST DATA 2308(A) (if Applicable): N/A FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water
: 2308(A) : CADDIICABLE): N/A FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD RECOVERY: Approximately 60° In Water
FRAGMENTATION TEST DATA 1. 2308(A) 2. 2308(A) 3. 45" ID x 4.15" OD 4.15 A.15 A.15 A.15 A.15 A.15 A.15 A.15 A
FRAGMENTATION TEST DATA 2308(A) FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD
FRAGMENTATION TEST DATA: 5.0" L x 3.45" ID x 4.15" OD
FRAGMENTATION TEST DATA 2308(A) FRAGMENTATION TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD
FRAGMENTATION TEST DATA 7308(A) TEST ITEM: 5 011 1 2 4 4511 10 2 4 1511 00
FRAGMENTATION TEST DATA
FRAGMENTATION TEST DATA
TEST
TEST
TEST

ALL ALL 5.4	FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder	N/A RECOVERY: Approximately 60° in Water	HARONESS (R "C"): 35 (Avarage of 2 Cylinders)	88	Y WEIGHT	2 AVERAGE 50		9.0	14.9	- 58	22.8	7.3	130 BY	F	750			FRAGS (gr.)	4	
	308(A)	Applicable):	C1095 Steel	OR CODE:	AGMENTS	#1 SHOT #2	- و	- 0		31.0					 	 	·			

	FRAGMENTATION TEST DATA	2308(A) TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cvlinder	Applicable): N/A RECOVERY: Approximately 60° ir	C1095 Steel HARDNESS (R "C"): 36 (Average of 2 Cvlinders)	OR CODE: CCIO	SOF FRAGMENTS BY WEIGHT AVERAGE DATA	SHUT #1 SHOT #2 AVERAGE	3.3 4.2 3.8 10.1 17.2 13.7 21.9 26.9 14.4 33.2 8.8 8.1 8.5 8.1 8.1 8.5 8.1 8.1 8.5 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1 8.1	MEAN WEIGHT ALL FRAGS (ar.)		0- -2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 >150
CONTRACT: 2 TEST NO. (1f MATERIAL: MATERIAL: HEAT TREATMEN WEIGHT % GROUPS GROUPS SHG 0-1 10-2 2-5 10-2 2-5 2-5 2-5 75-150					TREATMENT OR CO	Q F		w. ω 0 − 2 m α α w. ω − ω ω α α	MEAN WEIGH	4.98	

CONTRACT: 2 TEST NO. (1f A MATERIAL: C HEAT TREATMENT WEIGHT % OF GROUPS GROUPS GROUPS 1-2 2-5 2-5 5-10 10-20 14 20-25 8 25-50 50-75 16 75-150 6 75-150 6 14	FRAGMENTATION TEST DATA			AL: C1095 Steel HARDNESS (R "C"): 44 (Average of 2 Cylinders)	CS6			SHOT #1 SHOT #2 AVERAGE	•	2.6 3.9 3.	-	8.1 6.6 7.4	22.0 27.3 24	21.0 20.8 20.9	0.9							MEAN WEIGHT ALL FRAGS (ar.)	14.99 9.92 12.50		
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CONTRACT: TEST NO. MATERIAL: HEAT TREA GROUPS GROUPS GROUPS 10-20 2-5 5-10 10-20 20-25 20-25 20-25 20-75	SHO SHO C	OT #2 1-7 1-7 1-7 1-7 1-7 1-7 4.5 4.5	N/A CCS8 Y WEIGHT AVERAGE 1.6 2.4 9.9 16.1 28.5 11.6	FRAGMENTATION TEST DATA TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder RECOVERY: Approximately 60° in Weter HARDNESS (R "C"): 45 (Average of 2 Cylinders) AVERAGE DATA AVERAGE DATA
-	MEAN WEIGHT	ALL 6.79	FRAGS (gr.)	
MEAN WEIGHT	[1	10.50	0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 WEIGHT GROUPS (grains)

9261

STEEL

FRAGMENTATION TEST DATA	TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinder	RECOVERY: Approximately 60° in Water	HARDNESS (R "C"): 58 (Average of 2 Cylinders)		AVERAGE DATA	05			04		30 BY	, T.	750					2-5 5-10 10-20 20-25 25-50 50-75 75-150 150	WEIGHT GROUPS (grains)
		N/A		006	. WEIGHT	AVERAGE	28	0.4	20.0	26.8	0.0				•	FRAGS (ar.)		70.,	11.67
	()	icable):	Steel	CODE:	FRAGMENTS BY	SHOT #2	2.3	12.8	16.5	32.9	9					ALL		0.4/	NTS > 1 Gr
	2308(A)	(If Applicabl	9261		\$ OF FRA	SHOT #1			23.5		· · ·					MEAN WEIGHT	!	1.51	IT FRAGNENTS
	CONTRACT:	TEST NO.	MATERIAL:	HEAT TREAT	WE I GHT	GROUPS (Grains)	0-1-2	5-10	10-20	25-50 50-75	75-150		•						MEAN WEIGHT

ACTION AND AND ADDRESS OF

FRAGMENTATION TEST DATA	TEST ITEM: 5.0" L x 3.45" ID x 4.15" OD Cylinger	oximately 60° in Water	HARENESS (R "C"): 15 (Average of 2 Cylinders)		AVERAGE DATA	05			40			130 BY						7 061< 1061-6/16/-06 06-62 50-52 10-50 6-5 6-7 7-1 1-0
		N/A		DA6	WEIGHT	AVERAGE	6.		10.7	5.4	13.6	9.9				FRAGS (gr.)	13.20	
	2308(A)	Applicable):	Steel	CODE:	FRAGMENTS BY	SHOT #2	0			5.7	8.3					ALL	10.60	
	230	(If Applic	9261	S S	% OF FRAC	SHOT #1	7.		7.8	5.1 20.5	18.8	13.2				MEAN WEIGHT	15.80	
	CONTRACT:	TEST NO. (MATERIAL:	HEAT TREATMENT	WE I GHT	GROUPS (Grains)	0-1	2-5	10-20	20-25 25-50	50-75 75-150	> 150						

				FRAGMENTATION TEST DATA
CONTRACT		2308(A)		
TEST NO.	(1f Appli	Applicable):	N/A	RECOVERY: Approximately 60° in Water
MATERIAL:		9261 Steei		HARDNESS (R "C"): 16 (Average of 2 Cylinders)
HEAT TREA	TREATMENT OR	CODE:	DA8	
WEIGHT	% OF FRA	FRAGMENTS BY	WEIGHT	AVERAGE DATA
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE	05-
9.	.7	8,		
2-5	0.0	- 4 0 C	2.6	
5-10	7.5	8.0	 	
10-20	-0-	19.4	14.8	2
20-25	4.6	6.6 0.0	8.0	
50-75	/ ° 6 7	7.6	0.67	
75-150	19.1	21.7	20.4	
				T. W.T.
			and the second	
	MEAN WEIGHT	ALL	FRAGS (ar)	
	12 45	92 11	63 61	
	7.5.	0/•11	12.04	0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 >150
MEAN WEIGHT	IT FRAGMENTS	ITS > 1 Gr	18.21	WEIGHT GROUPS (grains)
	1			

				FRAGMENTATION TEST DATA
CONTRACT:	2308(A)	A)		TEST
TEST NO. ((If Appli	Applicable):	N/A	X m2
MATERIAL:	9261	Steel		HARDNESS (R "C"): 43 (Average of 2 Cvlinders)
HEAT TREAT	TREATMENT OR	CODE:	9SO	
WEIGHT	% OF FRA	FRAGMENTS BY	WEIGHT	AVERAGE DATA
GROUPS (Grains)	SHOT #1	SHOT #2	AVERAGE	057
9	-	1.3	1.2	
1-2 2-5	œ <	<u> </u>		
5-10		7.6	6.7	
10-20	•	15.2	•	04
20-25	32.5	3 0 0	2.7	
50-75	• •	15.7	• •	
75-150 > 150	9.1	17.7	-5 4.6	30 67
	مر نور دا الا			3
				-20
				0
	MEAN WE I	WEIGHT ALL F	FRAGS (ar)	
		ŀ	ŀ	
	co.o.	9.20	9.63	0-1 1-2 2-5 5-10 10-20 20-25 25-50 50-75 75-150 >150
MEAN WEIGHT	T FRAGMENTS	NTS > I Gr	18.39	WEIGHT GROUPS (grains)